Small Business Innovation Research/Small Business Tech Transfer

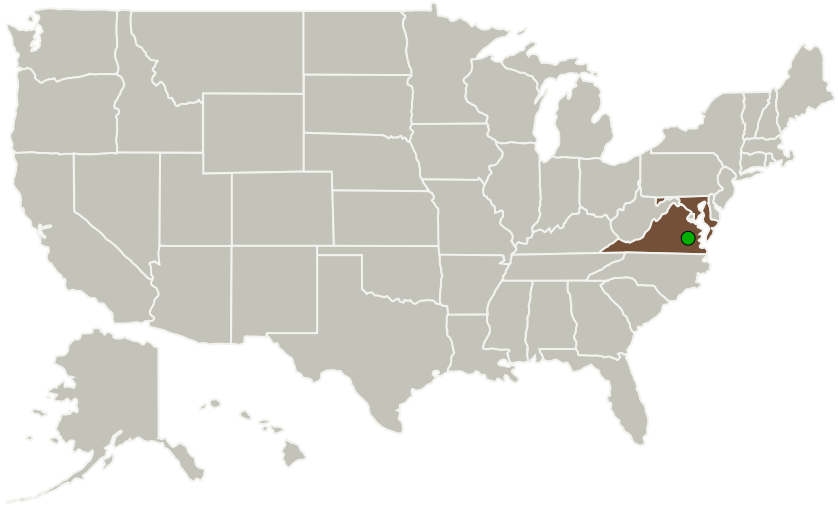
Monitoring Real-Time NAS Safety with State-Dependent Risk Models, Phase I

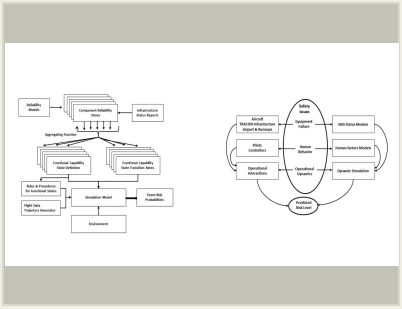
Completed Technology Project (2016 - 2016)

Project Introduction

NASA recently added real-time, system-wide safety assurance (RSSA) as one of its aeronautics strategic thrusts. As NASA, FAA, and industry introduce new technologies, concepts, and vehicles into a growing and evolving national airspace system (NAS), the need for monitoring of an increasingly complex, congested, and more automated system becomes greater. RSSA will develop risk models, methods, computational solutions, and prototype monitoring systems to move risk identification and mitigation from weeks and months to real-time. The preliminary RSSA technology roadmap identifies the need for real-time NAS-wide status monitoring but does not describe how this information would be provided or used to assess real-time changes in safety risk. Our proposal aims to demonstrate how to accomplish those objectives and quantify risk for normal safe operations and degraded states, thereby accelerating RSSA milestones. Our approach enables real-time estimates of NAS risk and can also provide valuable insight into assessments of new technologies and procedures. FAA interest in this capability offers the potential for an FAA deployment platform by integrating the state-dependent risk models with an existing FAA safety analysis and monitoring tool, the Integrated Safety Assessment Model (ISAM).

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Robust Analytics	Lead Organization	Industry Women-Owned Small Business (WOSB)	Crofton, Maryland
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Maryland	Virginia

Project Transitions

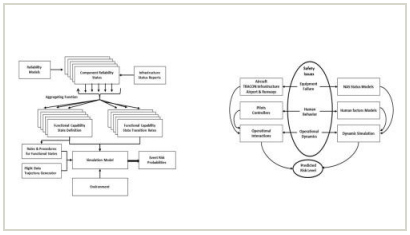
June 2016: Project Start

December 2016: Closed out

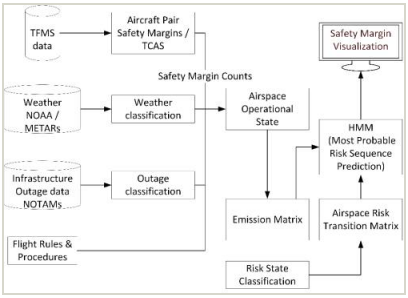
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139839)*

Images



Briefing Chart Image
Monitoring Real-time NAS Safety with State-Dependent Risk Models, Phase I
(https://techport.nasa.gov/image/130980)



Final Summary Chart Image
Monitoring Real-time NAS Safety with State-Dependent Risk Models, Phase I Project Image
(https://techport.nasa.gov/image/131575)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Robust Analytics

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

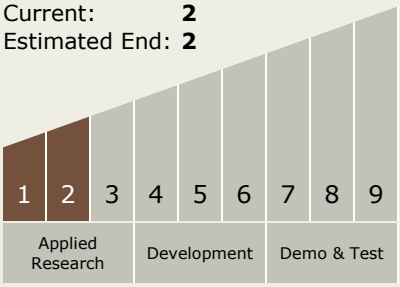
Carlos Torrez

Principal Investigator:

Peter F Kostiuk

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **2**



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Completed Technology Project (2016 - 2016)

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.2 Avionics Systems and Subsystems
    - TX02.2.7 Data Reduction Hardware Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System